

[CMSC 425/525] In-Class: Dataflow Coverage

Dr. Kosta Damevski

Consider the following code and graph (from lecture) with dataflow annotations.

```
public static void computeStats (int [ ] numbers)
{
    int length = numbers.length;
    double med, var, sd, mean, sum, varsum;

    sum = 0;
    for (int i = 0; i < length; i++)
    {
        sum += numbers[i];
    }
    med = numbers [length / 2];
    mean = sum / (double) length;

    varsum = 0;
    for (int i = 0; i < length; i++)
    {
        varsum = varsum + ((numbers[i] - mean) * (numbers[i] - mean));
    }
    var = varsum / (length - 1.0);
    sd  = Math.sqrt(var);

    System.out.println ("\length: " + length);
    System.out.println ("\mean: " + mean);
    System.out.println ("\median: " + med);
    System.out.println ("\variance: " + var);
    System.out.println ("standard deviation: " + sd);
}
```

1. List all of the def-use paths (i.e. the All Def-Use Path Coverage Criteria).
2. Remove any paths from the step before that are subpaths of another path. Identify a set of test cases, by providing the input data to the `computeStats` method and the associated test path, that will cover as many of the remaining def-use paths.